

# United States Patent [19]

Del Bono et al.

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[54] PROCESS FOR PRODUCING NATURAL  
HEPARAN SULPHATE AND DERMATAN  
SULPHATE IN SUBSTANTIALLY PURE  
FORM, AND THEIR PHARMACEUTICAL  
USE

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514/822

[58] Field of Search ..... 514/56; 536/21, 55.1,  
536/55.2, 55.3

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## [57] ABSTRACT

A process for producing natural heparan sulphate and dermatan sulphate for mixtures of proteoglycans from the aorta, myocardium and particularly vascularized organs, based on a series of precipitation and purification steps which enable the protein part of the proteoglycan to be eliminated and the two products to be obtained in substantially pure form, without any chemical or enzymatic degradation.

When administered orally or parenterally, the heparan sulphate obtained exerts activation effects on antithrombin III and on the fibrinolytic process.

The dermatan sulphate obtained exerts an inhibiting effect on Factor Xa and also possesses the property of activating the fibrinolytic effect of heparan sulphate.

12 Claims, No Drawings